

CLAIMS:

1. A color display device for displaying a color image, comprising
a display panel provided with a plurality of picture elements,
at least two selectable lightsources having different predetermined radiance
spectra's,
5 a color selection means which in combination with the selectable light sources
is able to produce primary colors on the display panel,
control means arranged to select alternately one of the selectable lightsources
during a first and second period respectively and to provide a portion of the picture elements
with image information corresponding to the primary color obtainable with the selected light
10 source.
2. A color display device as claimed in claim 1 wherein the color selection means
comprises at least two color filters having predetermined transmittance spectra which in
combination with each of the radiance spectra of the selectable light sources yields a first
15 group of primary colors obtainable by selecting the first light source and a second group of
primary colors obtainable by selecting the second light source.
3. A color display device as claim in claim 2 wherein each color filter is
associated with a portion of the picture elements and the control means being arranged,
20 during a first period, to select the first light source and to provide the respective portions of
the picture elements associated with the respective color filters with image information
corresponding to respective primary colors of the first group and
during a second period, to select the second light source and to provide the
respective portions of pixel elements associated with the respective colorfilters with image
25 information corresponding to respective primary colors of the second group.
4. A color display device as claim in claim 2 wherein the color selection means
comprises two color filters and the first group of primary colors contains red and green and
the second group of primary colors contains green and blue.

5. A color display device as claimed in claim 2 wherein the color selection means comprises two color filters and the first group of primary colors contains blue and yellow and the second group of primary colors contains cyan and red.
- 5 6. A color display device as claimed in claim 1 wherein the first light source is able to emit radiation having a spectral distribution having peaks centered around the red and cyan wavelength ranges respectively and the second light source is able to emit radiation having a spectral distribution having peaks centered around the green-red and blue wavelength.
- 10 7. A color display device as claimed in claim 6 wherein the color selection means comprises a filter arrangement comprising a number of lines each line comprises consecutive triplets of a blue-cyan filter, a white filter and a green-red filter, wherein the blue-cyan filter has a pass band for the blue-cyan portion of the spectrum of the radiation, the white filter has a pass band for the visible portion of the spectrum of the radiation and the green-red filter has a pass band for the green-red portion of the spectrum of the radiation.
- 15 8. A color display device as claimed in claim 7 wherein the positions of the blue-cyan filter and the green-red filter respectively in the triplets of a first line are interchanged with respect to the positions of the blue-cyan filter and the green-red filter respectively in the triplets of a second line consecutive to the first line.
- 20 9. A color display device as claimed in claim 7 wherein a line comprises consecutive triplets wherein the green-red filter and blue-cyan filter meet each other and together enclose the white filter.
- 25 10. A color display device as claimed in claim 7 wherein the pitch P represents the distance between the centers of two consecutive filters in the triplet, and the triplets of a first line are displaced with a distance of 1.5 times the pitch P with respect to triplets of a second line, consecutive to the first line.
- 30 11. A color display device as claimed in claim 2 wherein the color selection means comprises three color filters and the first group of primary colors contains red, green and blue and the second group of primary colors contains cyan, deep blue and yellow.

12. A color display device as claimed in claim 3 wherein the primary colors of the first group combined together form substantially white and the primary colors of the second group combined together form substantially white and the control means are arranged to
5 adjust a modulation level of the display panel for the primary colors corresponding to the two subsequent periods that the perceived difference in luminance and/or chrominance in the two subsequent periods is minimized.
13. A color display device as claimed in claim 12 wherein the control means are
10 arranged to adjust a modulation level of the display panel so as to minimize the perceived difference in luminance and/or chrominance of the obtained primary colors corresponding to the two subsequent periods is minimized.
14. A color display device as claimed in claim 12 wherein the control means are
15 arranged to adjust the brightness levels of the sequentially selected light source so as to minimize a measured difference in luminance and/or chrominance of illumination of the display panel corresponding to the two subsequent periods.
15. A color display device as claimed in claim 1 wherein the color selection means
20 comprises a lightguide for guiding the light from one of the light source to the portion of the display elements corresponding to one of the primary colors.
16. A color display device as claimed in claim 1 wherein the light sources
25 comprise fluorescent lamps or light emitting diodes.
17. A method of operating a color display device for displaying a color image, comprising the steps of :
generating light having different predetermined radiance spectra in
subsequent first and second periods,
30 filtering the generated light from the selected light sources for generating primary colors on the display panel during the subsequent periods, and
providing image information corresponding to the primary colors related to the subsequent periods to portions of the color display panel